Unit 2: Space Systems

Content Area: **Science**
Course(s): **Science 6, School Newspaper**
Time Period: **October**
Length: **6 weeks**
Status: **Published**

Transfer

Space Systems

This unit expands upon the learners understanding of Earth Science.

Students will study the solar system in this unit with a focus on the moon, earth and sun.

Solar system models explain and predict eclipses, lunar phases, and seasons.

Enduring Understandings

The Moon orbits Earth as Earth orbits the Sun. The Sun is at the center of the solar system.

The solar system is part of the Milky Way, one of billions of galaxies in the universe.

The solar system contains many varied objects held together by gravity. Solar system models explain and predict eclipses, lunar phases, and seasons.

Essential Questions

How does the Earth move?

What causes seasons on Earth?

How does the Moon affect Earth?

How do solar and lunar eclipses differ?

How does gravity influence the shape and the motion of objects in the solar system?

What objects are in the solar system?

How does Earth compare with other objects in the solar system?

What are stars and how does the sun compare to other stars?

How is the universe structured and where is Earth located in the universe?

Critical Skills and Knowledge

Vocabulary

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Revolution, Rotation, Equinox, Solstice, Waxing, Waning, Tide, Eclipse, Planet,

Dwarf planet, Moon, Asteroid, Comet, Meteoroid, Meteor, Star, Light-year, Galaxy, Big Bang Theory

Learning Objectives

Distinguish between Earth's rotation and Earth's revolution.

Model how the Sun strikes Earth's surface.

Model how solar energy spreads out over Earth's surface throughout the year.

Simulate how the Moon moves around the Earth.

Illustrate and demonstrate a solar eclipse and lunar eclipse.

Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

Model the different phases of the moon.

Demonstrate the gravitational pull between the Sun and a planet.

Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

Construct a scale model of the solar system.

Analyze and interpret data to determine scale properties of objects in the solar system.

Compare the sun to other stars in the sky.

Describe the location of Earth within the universe.

Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

Write informative/explanatory essay describing how the solar system relates to eclipses, lunar phases, and seasons.

Resources

iScience- Chapter 2

Newsela- Earth and Space Science Text Sets, What Is An Eclipse?

BrainPoP- Moon phases, Solar System

Moon Calendar- moongiant.com

NASA website- Scale Model of the Solar System - https://www.nasa.gov/pdf/546148main_ESS8_ScaleModelsOfTheSolarSystem_C3.pdf

Big Bang Theory

http://nj.pbslearningmedia.org/resource/e12d1aeb-b8b2-4995-b723-6f5d901fd48d/space-sounds-sound-of-the-big-bang-its-okay-to-be-smart-pbs-digital-studios/

PBS Learning Media

www.pbslearningmedia.org

NGSS

http://www.nextgenscience.org/next-generation-science-standards

Model Curriculum

http://www.state.nj.us/education/modelcurriculum/

Standards

LA.RST.6-8	Reading Science and Technical Subjects
LA.WHST.6-8	Writing History, Science and Technical Subjects
	Production and Distribution of Writing
6-8.MS-ESS1	Earth's Place in the Universe
6-8.MS-ESS1-3	Analyze and interpret data to determine scale properties of objects in the solar system.
6-8.MS-ESS1-1.2.1	Develop and use a model to describe phenomena.
SCI.6-8.MS-ESS1-2	Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
SCI.6-8.MS-ESS1-1	Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
SCI.6-8.MS-ESS1-3	Analyze and interpret data to determine scale properties of objects in the solar system.
SCI.6-8.MS-ESS1-1.1.1	Patterns can be used to identify cause-and- effect relationships.
SCI.6-8.MS-ESS2-5.2.1	Cause and effect relationships may be used to predict phenomena in natural or designed systems.
SCI.6-8.MS-ESS1-2.ESS1.A.1	Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies

	in the universe.
SCI.6-8.MS-ESS1-1.ESS1.A.1	Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models.
SCI.6-8.MS-ESS1-3.ESS1.B.1	The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.
SCI.6-8.MS-ESS1-2.ESS1.B.1	The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.
SCI.6-8.MS-ESS1-1.ESS1.B.1	This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year.